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10/697,370	10/30/2003	George Liang	2003PI3685US	7887

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Siemens Corporation
Intellectual Property Department
170 Wood Avenue South
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EXAMINER	
VERDIER, CHRISTOPHER M	
ART UNIT	PAPER NUMBER
3745	

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/697,370	LIANG, GEORGE	
	Examiner	Art Unit	
	Christopher Verdier	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 5-20* is/are rejected.

7)☒ Claim(s) *2-4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10-30-03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "66" (figure 2). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: Appropriate correction is required.

On page 1, line 29, "trialing" should be changed to -- trailing --.

On page 1, line 30, "substantially" should be changed to -- substantial --.

On page 1, line 31, "movable" should be to -- movably --.

On page 5, line 13, -- an – should be inserted after "In".

On page 6, line 27, "32" should be changed to -- 54 --.

On page 7, line 1, "32" should be changed to -- 54 --.

Examiner's Suggestions to Claim Language

The following are suggestions to improve the clarity and precision of the claims:

In claim 1, line 22, "a" may be changed to -- the --.

In claim 12, line 24, "a" may be changed to -- the --.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 12, line 21, recites "at least one metering orifice", while claim 12, line 22 recites "each of the plurality of metering orifices". Therefore, it is unclear if claim 12 is limited to a metering orifice, or plural metering orifices. Claim 13, which recites "at least one metering orifice" in line 4 is indefinite for the same reason. If Applicant intends for claim 12 to recite plural metering orifices, then claim 18 fails to further limit claim 12. Claim 20, which recites "the plural metering orifices" in line 1 is indefinite for the same reason that claim 12 is indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 6-9, and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Tiemann 2004/0022630. Note the turbine vane 1 comprising a generally elongated hollow airfoil 7 having a leading edge 8, a trailing edge 10, an inherent pressure side and an inherent suction side due to the airfoil shape, a first end 5 adapted to be coupled to a shroud assembly, and a second end near 13 opposite the first end adapted to be coupled to a manifold assembly, a serpentine cooling path formed from a first inflow section near 61 and a first outflow section near 21, the first outflow section in communication with the first inflow section and extending from a first turn (to the right of 35) generally toward the first end of the generally elongated hollow airfoil; at least one inlet orifice near 37 in the first inflow section of the serpentine cooling path at the first end of the generally elongated hollow airfoil; at least one exhaust orifice near 10 in the trailing edge of the generally elongated hollow airfoil and coupled to the serpentine cooling path for exhausting cooling fluids from the serpentine cooling path; at least one leading edge cooling path (near 51) positioned proximate to the leading edge; at least one metering rib 39 defining a barrier between a portion of the first inflow section and the at least one leading edge cooling path, wherein the at least one metering rib includes at least one metering orifice 43, and the at least one metering orifice in the metering rib is sized to regulate flow of cooling fluids through the at least one leading edge cooling path and into a manifold

assembly. The first inflow section 61 of the serpentine cooling path is a convergent cooling path that has a first cross-sectional area at the first end 6 of the generally elongated hollow airfoil that is greater than a second cross-sectional area at the second end 13 of the generally elongated hollow airfoil, and the serpentine cooling path further comprises a second inflow section near 27 positioned between the first outflow section and the trailing edge and in communication with the first outflow section. The serpentine cooling path further comprises a plurality of trip strips 29, and the at least one metering orifice 43 comprises a plurality of metering orifices in the metering rib. The metering rib is adapted to control flow of a cooling fluid through the turbine vane so that a sufficient amount of cooling fluid is passed through the serpentine cooling path to cool portions of the trailing edge. The recitation in claim 1, line 3 of "adapted to be coupled to a shroud assembly", and the recitation in claim 1, lines 4-5 of "adapted to be coupled to a manifold assembly" are recitations of intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). The vane of Tiemann is capable of coupling to both a shroud assembly and a manifold assembly, via respective hooks 11 and 13. The recitation in claim 1, lines 20-22 of the at least one metering orifice in the metering rib being "sized to regulate flow of cooling fluids through the at least one leading edge cooling path and into a manifold assembly" is a recitation of intended use as set forth above. The metering orifices 43 allow flow of cooling fluids into the

leading edge cooling path 51, and because the metering orifices are of such as size as to allow such flow to pass through, they inherently will allow flow into the manifold assembly.

Claims 1 and 7-9 rejected under 35 U.S.C. 102(b) as being anticipated by Beabout 5,511,309. Note the turbine vane 32 comprising a generally elongated hollow airfoil 36 having a leading edge 42, a trailing edge 44, an unnumbered pressure side and an unnumbered suction side, a first end near 38 adapted to be coupled to a shroud assembly, and a second end near 40 opposite the first end adapted to be coupled to a manifold assembly, a serpentine cooling path formed from a first inflow section near 60 and a first outflow section near 61, the first outflow section in communication with the first inflow section and extending from a first turn near 68 generally toward the first end of the generally elongated hollow airfoil; at least one inlet orifice near 54 in the first inflow section of the serpentine cooling path at the first end of the generally elongated hollow airfoil; at least one exhaust orifice near 74 in the trailing edge of the generally elongated hollow airfoil and coupled to the serpentine cooling path for exhausting cooling fluids from the serpentine cooling path; at least one leading edge cooling path near 100 positioned proximate to the leading edge; at least one metering rib 98 defining a barrier between a portion of the first inflow section and the at least one leading edge cooling path, wherein the at least one metering rib includes at least one metering orifice 96, and the at least one metering orifice in the metering rib is sized to regulate flow of cooling fluids through the at least one leading edge cooling path and into a manifold assembly. The serpentine cooling path further comprises a second inflow section near 62 positioned between the first outflow section and the trailing edge and in communication with the first outflow section. The serpentine cooling path further

comprises a plurality of trip strips 72, and the at least one metering orifice 96 comprises a plurality of metering orifices in the metering rib. The metering rib is adapted to control flow of a cooling fluid through the turbine vane so that a sufficient amount of cooling fluid is passed through the serpentine cooling path to cool portions of the trailing edge. The recitation in claim 1, line 3 of "adapted to be coupled to a shroud assembly", and the recitation in claim 1, lines 4-5 of "adapted to be coupled to a manifold assembly" are recitations of intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). The vane of Beabout is capable of coupling to both a shroud assembly and a manifold assembly, via unnumbered hooks near 38 and via platform 40, respectively. The recitation in claim 1, lines 20-22 of the at least one metering orifice in the metering rib being "sized to regulate flow of cooling fluids through the at least one leading edge cooling path and into a manifold assembly" is a recitation of intended use as set forth above. The metering orifices 96 allow flow of cooling fluids into the leading edge cooling path 100, and because the metering orifices are of such as size as to allow such flow to pass through, they inherently will allow flow into the manifold assembly.

Claims 1, 6-7, and 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Redman 3,799,696 (figures 4-5). Note the turbine vane comprising a generally elongated hollow

airfoil 37 having an unnumbered leading edge, an unnumbered trailing edge, an unnumbered pressure side and an unnumbered suction side, a first end 36 adapted to be coupled to a shroud assembly, and a second end near 35 opposite the first end adapted to be coupled to a manifold assembly, a serpentine cooling path formed from a first inflow section near 55 and a first outflow section near 56, the first outflow section in communication with the first inflow section and extending from a first turn (to the right of 39) generally toward the first end of the generally elongated hollow airfoil; at least one inlet orifice near 55 in the first inflow section of the serpentine cooling path at the first end of the generally elongated hollow airfoil; at least one exhaust orifice 58 in the trailing edge of the generally elongated hollow airfoil and coupled to the serpentine cooling path for exhausting cooling fluids from the serpentine cooling path; at least one leading edge cooling path (near 37) positioned proximate to the leading edge; at least one metering rib 39 defining a barrier between a portion of the first inflow section and the at least one leading edge cooling path, wherein the at least one metering rib includes at least one metering orifice 43, 44, 46, and the at least one metering orifice in the metering rib is sized to regulate flow of cooling fluids through the at least one leading edge cooling path and into a manifold assembly. The first inflow section 55 of the serpentine cooling path is a convergent cooling path that has a first cross-sectional area at the first end 36 of the generally elongated hollow airfoil that is greater than a second cross-sectional area at the second end 35 of the generally elongated hollow airfoil, and the serpentine cooling path further comprises a second inflow section near 57 positioned between the first outflow section and the trailing edge and in communication with the first outflow section. The at least one metering orifice 43, 44, 45 comprises a plurality of metering orifices in the metering rib. The metering orifices have

different cross-sectional areas. The metering rib is adapted to control flow of a cooling fluid through the turbine vane so that a sufficient amount of cooling fluid is passed through the serpentine cooling path to cool portions of the trailing edge. The recitation in claim 1, line 3 of "adapted to be coupled to a shroud assembly", and the recitation in claim 1, lines 4-5 of "adapted to be coupled to a manifold assembly" are recitations of intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). The vane of Redman is capable of coupling to both a shroud assembly and a manifold assembly, via respective platforms 36, 35. The recitation in claim 1, lines 20-22 of the at least one metering orifice in the metering rib being "sized to regulate flow of cooling fluids through the at least one leading edge cooling path and into a manifold assembly" is a recitation of intended use as set forth above. The metering orifices 43, 44, 46 allow flow of cooling fluids into the leading edge cooling path, and because the metering orifices are of such as size as to allow such flow to pass through, they inherently will allow flow into the manifold assembly.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 6-7, and 9-10 are also rejected under 35 U.S.C. 103(a) as being unpatentable over Quinones 3,528,751 in view of Redman 3,799,696. Quinones discloses a turbine vane 30 substantially as claimed including a generally elongated hollow airfoil 33 having a leading edge 47, a trailing edge 48, a pressure side 46 and a suction side 45, a first end 35 adapted to be coupled to a shroud assembly, and a second end near 34 opposite the first end adapted to be coupled to a manifold assembly, a serpentine cooling path formed from a first inflow section near 51 and a first outflow section near 60, the first outflow section in communication with the first inflow section and extending from a first turn (below 60) generally toward the first end of the generally elongated hollow airfoil; at least one inlet orifice near 55 in the first inflow section of the serpentine cooling path at the second end 34 of the generally elongated hollow airfoil; at least one exhaust orifice 72 in the trailing edge of the generally elongated hollow airfoil and coupled to the serpentine cooling path for exhausting cooling fluids from the serpentine cooling path; at least one leading edge cooling path (near 50) positioned proximate to the leading edge; at least one metering rib 52 defining a barrier between a portion of the first inflow section and the at least one leading edge cooling path, wherein the at least one metering rib includes at least one metering orifice 74, and the at least one metering orifice in the metering rib is sized to regulate flow of cooling fluids through the at least one leading edge cooling path and into a manifold assembly. The serpentine cooling path further comprises a second inflow section near 61 positioned between the first outflow section and the trailing edge and in communication with the

first outflow section. The at least one metering orifice 74 comprises a plurality of metering orifices in the metering rib. The metering rib is adapted to control flow of a cooling fluid through the turbine vane so that a sufficient amount of cooling fluid is passed through the serpentine cooling path to cool portions of the trailing edge. The recitation in claim 1, line 3 of "adapted to be coupled to a shroud assembly", and the recitation in claim 1, lines 4-5 of "adapted to be coupled to a manifold assembly" are recitations of intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). The vane of Quinones is capable of coupling to both a shroud assembly and a manifold assembly, via respective platforms 32, 31. The recitation in claim 1, lines 20-22 of the at least one metering orifice in the metering rib being "sized to regulate flow of cooling fluids through the at least one leading edge cooling path and into a manifold assembly" is a recitation of intended use as set forth above. The metering orifices 74 allow flow of cooling fluids into the leading edge cooling path, and because the metering orifices are of such as size as to allow such flow to pass through, they inherently will allow flow into the manifold assembly.

However, Quinones does not disclose that the orifice near 55 in the first inflow section of the serpentine cooling path is at the first end 35 of the generally elongated hollow airfoil, rather

the orifice near 55 is at the second end 34 of the generally elongated hollow airfoil. In addition, Quinones does not disclose that the first inflow section of the serpentine cooling path is a convergent cooling path that has a first cross-sectional area at the first end of the generally elongated hollow airfoil that is greater than a second cross-sectional area at the second end of the generally elongated hollow airfoil, and does not disclose that the metering orifices have different cross sectional areas.

Redman 3,799,696 (figures 4-5) shows a vane having an orifice near 55 in a first inflow section 55 of a serpentine cooling path that is at a first outer end 36 of a generally elongated hollow airfoil, and the first inflow section of the serpentine cooling path is a convergent cooling path that has a first cross-sectional area at the first end of the generally elongated hollow airfoil that is greater than a second cross-sectional area at a second end 35 of the generally elongated hollow airfoil, with metering orifices 43, 44, 45 that have different cross sectional areas, for the purpose of ensuring adequate vane cooling.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the vane of Quinones such that the orifice in the first inflow section of the serpentine cooling path is located at the first end 35 of the generally elongated hollow airfoil, and such that the first inflow section of the serpentine cooling path is a convergent cooling path that has a first cross-sectional area at the first end of the generally elongated hollow airfoil that is greater than a second cross-sectional area at the second end of the generally

elongated hollow airfoil, with the metering orifices have different cross sectional areas, as taught by Redman, , for the purpose of ensuring adequate vane cooling.

Claim 10 is also rejected under 35 U.S.C. 103(a) as being unpatentable over Quinones 3,528,751 in view of Redman 3,799,696 and either (Clevenger 5,741,117 or Kercher 3,533,711). The combination of Quinones 3,528,751 and Redman 3,799,696 is set forth above. However, the modified vane of Quinones the combination does not explicitly show that the metering orifices have different cross sectional areas.

Clevenger (figure 1 and column 4, lines 1-6) and Kercher (figure 4 and column 7, lines 6-15) show cooled airfoils having respective metering orifices 38, 57, which may have individually varying cross sections, for the respective purposes of controlling pressure drop inside the airfoil and providing sufficient flow through the airfoil.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified vane of Quinones such that the metering orifices have different cross sectional areas, as taught by either Clevenger or Kercher, for the respective purposes of controlling pressure drop inside the airfoil and providing sufficient flow through the airfoil.

Claims 5, 12, 16-18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tiemann 2004/0022630 in view of Ohtomo 5,120,192. Tiemann discloses a vane

substantially as claimed as set forth above, including a leading edge cooling path 51, but does not disclose that the leading edge cooling path is a divergent cooling path such that a first cross-sectional area of the divergent cooling path at a first end of the leading edge cooling path proximate to the first end 5 of the generally elongated hollow airfoil is smaller than a second cross-sectional area of the at least one leading edge cooling path proximate to the second end 13 of the generally elongated hollow airfoil.

Ohtomo (figures 11-12) shows a cooled turbine vane having an insert 6 which forms a rib having metering orifices 8 and forms a leading edge cooling path 12 that is a divergent cooling path such that a first cross-sectional area of the divergent cooling path at a first end of the leading edge cooling path proximate to the first end 2 of the generally elongated hollow airfoil is smaller than a second cross-sectional area of the at least one leading edge cooling path proximate to the second end 13 of the generally elongated hollow airfoil, for the purpose of compensating for a decrease in pressure of a cooling medium sprayed from the metering orifices.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the vane of Tiemann such that the leading edge cooling path is a divergent cooling path such that a first cross-sectional area of the divergent cooling path at a first end of the leading edge cooling path proximate to the first end of the generally elongated hollow airfoil is smaller than a second cross-sectional area of the at least one leading edge cooling path proximate to the second end of the generally elongated hollow airfoil, as taught by Ohtomo, for

the purpose of compensating for a decrease in pressure of a cooling medium sprayed from the metering orifices.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tiemann 2004/0022630 and Ohtomo 5,120,192 as applied to claim 18 above, and further in view of Redman 3,930,478. The modified vane of Tiemann shows all of the claimed subject matter except for at least a portion of the plural metering orifices 51 being of different cross sectional areas.

Redman '478 (figures 3-4 and column 5, lines 61-68) shows a cooled turbine vane having inserts 21, 40 which have metering orifices 30, 31, 53, 54, 55, 56, which may be of differing sizes, for the purpose of adjusting the cooling pressure and cooling effect.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified turbine vane of Tiemann such that the plural metering orifices 51 are of different cross sectional areas, as taught by Redman '478, for the purpose of adjusting the cooling pressure and cooling effect.

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kuwabara is cited to show a cooled turbine vane having an insert with metering holes of different cross sectional areas.

Allowable Subject Matter

Claims 2-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 13-15 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (703)-308-2638. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (703) 308-1044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.V.
October 8, 2004

Christopher Verdier
Primary Examiner
Art Unit 3745